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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 09/776,472 | 02/02/2001 | Masaaki Hiroki | SEL 238 | 7144 |

7590 05/31/2005

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| EXAMINER |
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CLEVELAND, MICHAEL B

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| ART UNIT | PAPER NUMBER |
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1762

DATE MAILED: 05/31/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/776,472

Applicant(s)

HIROKI ET AL.

Examiner

Michael Cleveland

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 14 March 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 6,7,10-12 and 19-47 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 6,7,10-12 and 19-47 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 10/1/2004 has been entered.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

3. Claims 26-30 and 43-47 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. There is no support in the specification as originally filed for the that, in the claimed context, the nozzle and the first and second pixel electrodes are connected by a single application liquid.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various

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claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

6. Claims 6, 10-12, 19-20, 22-25, 31, 33-37, and 39-42 are rejected under 35 U.S.C. 103(a) as being unpatentable over Miyashita et al. (WO98/24271, hereafter '271. References made are to the English equivalent, US Patent Application 2002/0041926) in view of Horike (U.S. Patent 4,281,332, hereafter '332), Iguchi (WO98/27579, hereafter '579. References made are to the English equivalent US Patent Application 2002/0009536.) and Kasubuchi et al. (U.S. Patent 3,878,517, hereafter '517).

Claims 6, 20, 31, and 37: '271 teaches filling an ink-jet nozzle with ink (an application liquid) for forming an electroluminescent (EL) layer and applying it to a pixel column (Abstract; Fig. 1).

'271 does not explicitly teach that the ink-jet nozzle works using ultrasonic oscillation, but instead teaches the use of a vibration pulse pressure dispenser (See [0083]-[0087]). '332 teaches a particular pulse pressure dispenser (col. 1, lines 6-11), which uses ultrasonic vibrations (i.e., oscillations) in order to provide pressure pulses (col. 3, lines 1-15). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have used the ultrasonic vibrator of '332 as the particular vibrator of '271 with a reasonable expectation of success because '332 demonstrates that ultrasonic vibrations are capable of providing the pressure pulses to operate ink-jet printing nozzles.

'271 and '332 do not explicitly teach discharging the application liquid while the nozzle and pixel column are connected through the application liquid nor traversing by scanning along a direction parallel to a pixel column. The differently colored pixels of '271 appear to be small rectangles rather than elongated stripes (Fig. 8). However, '579 teaches that the differently colored areas of plasma displays (a particular type of electroluminescent displays), may be elongated stripes, which are printed by traversing a nozzle along the direction parallel to the barrier ribs ([0206]-[0207]), which are between, and therefore parallel to the underlying

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electrodes (Fig. 1; [0293]). '517 teaches that ink-jet printing using ultrasonic oscillations may be used to provide ink intermittently or to provide a continuously-discharged stream of droplets (col. 7, lines 6-24). However, '579 teaches that the deposited material in the pixel column may be connected to the nozzle via the liquid stream (Fig. 1). The selection of something based on its known suitability for its intended use has been held to support a *prima facie* case of obviousness. *Sinclair & Carroll Co. v. Interchemical Corp.*, 325 U.S. 327, 65 USPQ 297 (1945). See MPEP 2144.07. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have used different colored pixels of elongated stripe shapes because '579 teaches that such is an operative embodiment of differently colored pixels for electroluminescent displays and to have deposited such stripes by a continuous stream because '579 teaches that a continuous stream connecting the nozzle and the pixel column may be used to deposit such stripes and because '517 teaches that ultrasonically-operated ink-jet printers are capable of providing continuous streams.

Claims 10-11, 22-23, 33-34, 39-40: '332 teaches that the ultrasonic vibrations provide pressure pulses that eject the droplets (col. 3, lines 1-15).

Claims 12, 25, 35, and 42: '579 teaches that when depositing electroluminescent material between partition walls of EL displays ([0001]-[0003]), it is desirable to maintain a constant distance between the substrate and the nozzles, and that such distance may be maintained by an element in contact with the partitions ([0246]-[0249]). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have used a contact element in contact with the partition walls in order to have maintained a constant distance between the nozzle and the substrate during the coating process.

Claims 19, 24, 36, 41: '271 teaches that the ink-jet printer prints between partition walls (banks) (105) covering at least an edge portion of pixel electrodes (101, 102, 103). (Fig. 1; [0043]-[0050]).

Claims 20 and 37: '332 teaches that a heater may be provided to control the viscosity of the ink (col. 11, lines 5-26).

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7. Claims 7, 21, 32, and 38 are rejected under 35 U.S.C. 103(a) as being unpatentable over Miyashita '271 in view of Horike '332, Iguchi '579, and Kasubuchi '517 as applied to claim 6, 20, 31, and 37 above, and further in view of Fujimura '803.

'271, '332, '579, and '517 are described above. '271 demonstrates that the orifice may have a smaller inside diameter than the rest of the nozzle (Fig. 11), but does not explicitly teach the provision of a heater on the orifice. '332 teaches that a heater may be provided to control the viscosity of the ink (col. 11, lines 5-26).

'803 teaches that the thermal energy for ejected ink jet droplets may be provided by heaters at the orifice (col. 2, lines 40-45; col. 5, lines 35-68). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have provided heaters at the orifice (which has a smaller diameter than the rest of the nozzle) with a reasonable expectation of success because '356 demonstrates an operative ink-jet nozzle formation with such a smaller nozzle and because '803 demonstrates that nozzles provided at the ink-jet nozzle orifice are operable for ejecting the ink.

8. Claims 26, 28-30, 43, and 45-47 are rejected under 35 U.S.C. 103(a) as being unpatentable over Miyashita '271 in view of Horike '332, Iguchi '579, and Kasubuchi '517 as applied to claims 6 and 31 above, and further in view of Kurosawa et al. (U.S. Patent 6,057,647, hereafter '647).

'271, '332, '579, and '517 are described above. '271 teaches that the EL elements may be deposited on top of thin film transistor (TFT) elements ([0015], [0134], [0138]) and teaches that the EL elements may be formed by forming pixel electrodes on a substrate and forming a bank overlapping the edges of the pixel electrodes on the pixel electrodes, as discussed above. '271 does not explicitly teach that a TFT is formed on a substrate, an insulating film is formed on the TFT, and the pixel electrodes (and then banks) are formed on the insulating film.

'647 teaches a method of depositing EL elements onto TFTs, in which TFTs (2, 3) are formed on substrate (31) and then insulating layer (52) is formed on the TFTs, followed by the anode (161) (as the pixel electrodes of '271) are anodes and partitions (63) (Fig. 14, col. 11, lines 1-25). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have used the configuration of '647 as the particular configuration to

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integrate the EL elements of '271 with the TFTs of '271 with a reasonable expectation of success because '647 teaches that that configuration is an operative method of using TFTs in conjunction with EL elements.

Claims 28-29, 45-46: See discussion of claims 10-11, above.

Claim 30, 47: See discussion of claim 12, above.

9. Claims 27 and 44 are rejected under 35 U.S.C. 103(a) as being unpatentable over Miyashita '271 in view of Horike '332, Iguchi '579, and Kasubuchi '517 and further in view of Kurosawa '647 as applied to claim 26 and 43 above, and further in view of Fujimura '803 as applied to claim 7, above.

Response to Arguments

10. Applicant's arguments filed 3/14/2005 have been fully considered but they are not persuasive.

Applicant argues that the recitation of claims 26 and 43 that "the nozzle *and* the first *and* second pixel electrodes are connected through *the* application liquid" (emphasis added by examiner). In the context of the claims, the first and second pixel electrodes are separated by a bank that overlaps the edges of both. Applicant argues that support is found in Figs. 1, 13, and 14 and at p. 7. The argument is unconvincing because the figures and specification show the first nozzle connected to the first pixel electrode by a first application liquid, and a second nozzle connected to the second pixel electrode by a second application liquid, but does not show one nozzle connected to two different pixel electrodes that are overlapped by the same bank by a *single* liquid, as required by the claim.

Applicant argues that the case law of MPEP 2144.07 applies only to materials. While the Examiner agrees that the case cited involved a material, the situation of selecting an appropriate method to accomplish a desired result is so clearly analogous to the selection of a particular material to achieve a desired function to justify the Examiner's revised language. The discussion in MPEP 2144.07 of *Ryco, Inc. v. Ag-Bag*, which stated that performing braking by hydraulic operating rather than by mechanically operating was obvious, emphasizes this analogy. Iguchi is

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cited for its teaching to perform the same function as the other references, that is, to deposit red, green, and blue electroluminescent materials onto a display.

Insofar as Applicant's arguments regarding Iguchi are an assertion of nonanalogous art, it has been held that a prior art reference must either be in the field of applicant's endeavor or, if not, then be reasonably pertinent to the particular problem with which the applicant was concerned, in order to be relied upon as a basis for rejection of the claimed invention. See *In re Oetiker*, 977 F.2d 1443, 24 USPQ2d 1443 (Fed. Cir. 1992). In this case, Iguchi is reasonably pertinent to the particular problem with which Applicant was concerned, that is, the deposition and positions of red, green, and blue materials to create different colored pixels of an electronic display.

The Examiner acknowledges that there is a difference between solid-state EL displays (where the EL material is sandwiched between two opposing (sets of) electrodes) and plasma EL displays (in which an intervening plasma is excited to cause electroluminescence), but disagrees that the difference is expressed adequately merely by the term "electroluminescent". (Further discussion follows in the succeeding paragraphs.) However, the arguments are *primarily* unconvincing because the particular function of the red, green, and blue materials would not disguise different operative pixel layouts and deposition methods. That is, even if Iguchi described the production of red, green, and blue elements of a color filter (which usually contain simple non-electroluminescent pigments) for a liquid crystal display, the Examiner would still have applied the reference because it would have been pertinent to the particular problem with which Applicant was concerned, that is, the deposition and positions of red, green, and blue materials to create different colored pixels of an electronic display.

Applicant argues that plasma displays are a very different type of displays than EL displays. The argument is unconvincing because there is a difference. Furthermore, it cannot be supported by evidence because all plasma displays operate by applying current to cause a material to glow (that is, by electroluminescence). Therefore, all plasma displays are inherently electroluminescent displays. Applicant argues that plasma displays are caused by applying voltage to a gas, not a phosphor are unconvincing because "electroluminescent" is defined by Merriam-Webster's Collegiate Dictionary, 10th edn. as "of or relating to luminescence resulting from a high-frequency discharge through a gas or from application of an alternating current to a

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layer of phosphor. Thus, Applicant's description that plasma displays operate by applying a voltage to a gas meet the definition of electroluminescence.

Applicant argues that Iguchi teaches photoluminescent phosphors which emits light by absorbing another light. The argument is incorrect. Iguchi teaches that the phosphor glows in response to electric fields [0148]. The phosphors of [0157] are electroluminescent phosphors. Applicant argues that [0148] do not *explicitly* indicate that the phosphors of Iguchi glow in response to the electric fields or that the phosphors are electroluminescent. The argument is unconvincing because glowing in response to a plasma is inherently electroluminescence. Furthermore, zinc sulfide is recognized as electroluminescent in the "History..." article supplied by Applicant.

Conclusion

11. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).


A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael Cleveland whose telephone number is (571) 272-1418. The examiner can normally be reached on Monday-Thursday, 7-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Shrive Beck can be reached on (571) 272-1415. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


Michael Cleveland
Primary Examiner
Art Unit 1762

11/30/2004